An Organizational Paradigm for Effective Academic Libraries

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The organizational structures of academic libraries are considered in light of the work of a number of organizational theorists, and related work by librarians is reviewed. An organizational paradigm for effective academic libraries is developed based on this review. The paradigm is composed of five parts: a modified professional bureaucratic structure, flexible resource allocation, the use of management information systems, the export of production functions, and the development of an organizational philosophy.

I begin with the assumption that the current organizational structures of academic libraries will not accommodate the roles that will soon be expected of them and the academic librarians who inhabit them. Predictions of the coming paperless society have been around for some time, but it is now clearly more than talk. The technology of scholarship is changing, and as Patricia Battin has said, "The effectiveness of new systems of access to scholarly resources will depend upon the cooperative efforts of the university community to identify and develop the substance of new structures to knowledge, a process which will demand new organizational capacities in the university."[1] I would add that libraries must find new organizational capacities as well.

Despite a history that includes some notable examples of innovation and change, the more important truth about academic libraries is that they are encumbered by record systems and by financial and organizational structures, which discourage innovation and make it difficult for them to manage uncertainty. For many good reasons academic libraries have been, and in large part still are, inertial institutions. The large investment in card files makes change in these structures all but impossible, as the recent experience with AACR2 has shown. In addition, the budgets of most academic libraries allow little or no flexibility. This, along with a capital budgeting approach in most colleges and universities that does not consider depreciation or return on investment, makes the justification of capital investment difficult. If academic libraries are to be successful in the future they must change.

Academic libraries have been primarily production organizations. Their product has been an organized collection of mostly print materials. The specific production technologies have changed, especially in the past twenty years, but the basic organizational philosophy and operational principles have remained largely unchanged for the better part of a century. The organizational structure adopted by academic libraries reflects this production orientation. Most are bureaucratic hierarchies or, to use another term, machine bureaucracies. In general, these organizational structures have been effective. They have allowed for consistency and control and for considerable job specialization. They are suited to an environment where

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coordination depends, as it does with libraries' complex record structures, on standardization of work.

This is changing. Service programs have become more important, and the standardization of records is becoming more a national, and less a local, issue. As a result of the development of national bibliographic utilities, academic libraries are increasingly capable of purchasing rather then producing bibliographic control. This ability to jettison much of the production function may provide academic libraries the opportunity to, as Battin has said, "draw into an existing strength the talents and expertise of individuals newly committed to the management and provision of scholarly information services and create an institutional capacity to reinvent the university in the electronic age."[2]

This article will explore the organizational structures that are available to academic libraries. Fundamental to this effort is the belief, shared by Henry Mitzberg and others, that an organization must find the structure that is the best fit to its function and environment and that this structure needs to be consistently constructed. As Mitzberg states:

> It should become evident how all of its elements of structure and situation form themselves into a tightly knit, highly cohesive package. No one element determines the others; rather, all are locked together to form an integrated system.[3]

The pieces must be put together so that they complement each other; they should be put together with purpose. To speak in William Ouchi's terms, the organization should have a well-developed philosophy. In looking at the organizational issues that confront academic libraries, we will begin by examining the work of a number of organizational theorists, particularly Mitzburg, Ouchi, Jay Galbraith, and Selwyn Becker and Duncan Neuhauser. This will provide a context for our discussion. We will then examine academic libraries in light of this theory and the work of some librarians who have addressed organizational issues. The final section of the paper will propose a structure and organizational philosophy that I believe will effectively serve academic libraries as they confront their new roles.

MITZBERG: STRUCTURAL ALTERNATIVES AND ORGANIZATIONAL FIT

Mitzberg begins his analysis of organizational structure by identifying five primary components of an organization.[4] They are (1) the strategic apex, or the top management; (2) the operating core, which contains the people who do the basic work of the organization; (3) the middle line or the managers between the operating core and the strategic apex; (4) the technostructure, which provides systems design, formal planning, and control; and (5) a support staff that provides indirect services, including everything from the mail room to legal services. Using these components as a basis, Mitzberg constructs five organizational configurations. Each has its own strengths and weaknesses; each is best suited for different tasks and different environments.

1. *Simple structure.* This configuration consists of a few managers in the strategic apex and an operating core. Notably missing are the other elements, a middle line, a technostructure, and a support staff. Organizations of this type tend to be small and are controlled and coordinated by direct supervision from the strategic apex. They tend to use simple technologies and purchase support services. Simple structures are lean and flexible. Centralized control allows rapid and flexible innovation and an ability to operate in a complex and even hostile environment. But this configuration is not without its limitations. It is highly dependent on strong and skilled leadership and is not suited for growth beyond a size that can be managed by direct supervision. This configuration also has difficulty with efficient mass production.

2. *Machine bureaucracy.* This is Mitzberg's term for what most of us think of simply as bureaucracy. This configuration specializes in mass production and is most effective in a stable environment. It emphasizes standardization of work and job specialization. To assure standardization this structure elaborates its administrative structures. This leads to a large middle

line to, as Mitzberg puts it, "oversee the specialized work of the operating core and to keep the lid on conflicts that inevitably result from rigid departmentalization, as well from alienation that often goes with routine, circumscribed jobs."[5] The technostructure is expanded to develop the required control mechanisms. In an effort to stablize its environment machine bureaucracies will internalize support functions in a large support staff. The problems of this configuration are well known—it creates dull and repetitive work that alienates employees. Organizations in this configuration seek control over their environment rather than adaption to it and are thus unlikely to be innovative. They have trouble using complex technologies that require a sophistication that is difficult to standardize or where the operating core consists of professional workers. While these problems exist, it is also true that machine bureaucracies can produce many products cheaply and efficiently and can provide stability by insulating themselves to resist shocks from the external environment. It is not without cause that this configuration is the most common in industrialized societies.

3. *Professional bureaucracy.* Law firms and colleges exemplify this configuration. It relies for coordination on the standardization and high level of skills of its operators, and many decisions, both operational and strategic, are made by these operators. Professional bureaucracies tend to be decentralized and democractic for the professionals in the operating core. Because of this decentralization there is a small middle line and large spans of control. The technostructure is also small because many of its tasks are performed by the professional operators. The support staff, on the other hand, tends to be large in order to give the professionals as much aid as possible. The strategic apex often does not so much supervise the operating core as provide a link to the broader environment. Professional bureaucracies can operate effectively in very complex environment because they can develop and apply high levels of skill. They can adapt, but they have trouble with fundamental or revolutionary change. To quote Mitzburg, "This is not a structure to innovate but one to perfect what is already known."[6]

4. *Divisional form.* This configuration comes into existence most often when the organization's product is diverse. Organizational units are often market based. The units themselves may take on any configuration, but they relate to the parent organization by a control system that emphasizes standardization of outputs, in most cases short-term profit. It is argued that this form allows for the distribution of entrepreneurial risk across a large organization, that it allows for the centralization and more efficient use of the technostructure and support staff, and that it is more adaptive than a machine bureaucracy. It is, however, dependant upon divisional goals that can be operationalized, quantified, and compared as well as on performance that can be measured in the short term. These requirements can produce an incentive structure for division managers not in the best long-term interest of the organization. Short-term profit taken at the cost of long-term growth and suboptimization are the likely results.

4. *Adhocracy.* This configuration suits organizations that need to innovate in complex ways in complex environments. It is a fluid structure based on interacting project teams. As such it is difficult to describe in traditional terms. Coordination and control come about through informal communication and mutual adjustment among the experts who make up the project teams. Power in an adhocracy is not based on authority or hierarchical position but rather on who has the expertise to best make a given decision. It is possible for everyone in the organization to contribute to both strategic and operational decisions. The direction in which the organization moves is determined from the bottom, based on how projects develop; it can not be imposed from the top. This configuration, as Mitzberg states, "contradicts much of what we accept on faith in organizations—consistency in output, control by administrators, unity of command, strategy emanating from the top."[7] Adhocracies can be considered inefficient because they require slack resources and cannot be tightly controlled. It is a config-

uration that can put men on the moon, but would likely not fare well competing in a stable production environment.

OUCHI: ORGANIZATIONAL CONTROL MECHANISMS AND THEORY Z

Unlike Mitzberg, who looks at structures, Ouchi sees mechanisms of organizational control as the key to understanding where and why organizations are successful. But like Mitzberg, Ouchi is a contingency theorist; that is, he believes that different types of organizational control work best for different tasks in different environments. In looking at effective organizational control mechanisms Ouchi and Raymond Price see two requirements. First, the mechanism must assure that members of the organization are motivated to pursue acceptable goals. Second, the members of the organization must have the information necessary to execute actions that will meet the goals. They argue that there are three basic organizational control mechanisms: markets, bureaucratic hierarchies, and clans.[8]

Markets use price as both a motivator, in that individuals seek to maximize personal wealth, and as a way of conveying information. But while market mechanisms are often used, they are generally supplemented by the use of a bureaucratic hierarchy. This is because price, especially in an organizational context, can be difficult to determine. Establishing the contribution made by different departments to a product, as anyone who has even briefly studied transfer pricing issues can atest, is far from a simple matter. Market theory states that for a market to be effective it must have perfect, or at least approximately perfect, information. In most organizations the cost of information makes a pure market impossible, thus there is often a fall back to bureaucratic control.

Bureaucratic hierarchies rely on the specification and monitoring of rules. The rules provide the required information on how members of the organization should act. The monitoring provides the motivation, at least in situations where employees accept employment in exchange for a willingness to allow their superiors to tell them what to do and monitor their performance closely. Rules, though, tend to be rigid and crude devices for conveying information; they simply cannot anticipate all possibile contingencies. To overcome this, in bureaucratic hierarchies, exceptions are passed up to a superior who has the authority to resolve the exception. Discretion is thus concentrated at the top of the organization. This creates a situation in which the employee is dependent on his or her superior. Bureaucratic hierarchies typically use job specialization to make rules simpler and monitoring easier.

The final organizational control mechanism identified by Ouchi and Price is the clan. A clan is a culturally homogeneous group whose members share both a common goal and a common understanding of the best ways to pursue that goal. In the pure form, the individual is socialized so that his or her goals coincide with those of the organization; this provides the motivation. In a clan, individual decision making becomes almost instinctual; thus, the clan can function even in ambiguous situations without the overriding structure required by a bureaucratic hierarchy or the information structures required by a market. But a clan is dependent on a stable and homogeneous membership, which in an industrialized society is difficult to achieve.

Ouchi and Price sum up the advantages these three mechanisms by stating

> Hierarchy is thus only one among the three mechanisms of social control over collective tasks. However, while markets require highly sophisticated price information for their operation and clans require extreme homogeneity and stability, bureaucratic hierarchies can operate with only partially committed, largely unsocialized employees, working under conditions of extreme ambiguity.[9]

They conclude that "if a bureaucracy is the only social control mechanism that can withstand the conditions accompanying industrialization, then we must agree . . . that bureaucratic hierarchy is here to stay."[10] In looking at ways to mitigate the negative effects of bureaucratic hierarchies—task specialization and dependency—it is necessary, Ouchi and Price argue, to incorporate either aspects of the market or aspects of clan mechanisms. Unless the essential control mecha-

nism is altered, they say, fundamental change in the organization will not be possible.

Ouchi argues for the adoption of elements of clan control to create what he calls the Theory Z organization.[11] The Theory Z organization dispenses with excessive bureaucratic structures by developing mechanisms of socialization. It takes advantage of the trust and subtlety that result from this socialization process to increase productivity. To achieve trust and subtlety, Theory Z organizations put a premium on long-term employment. They avoid excessive job specialization by rotating individuals through a number of organizational functions and promoting individuals slowly. Work is generally organized in groups that, while their output is measured, are given much autonomy in structuring their tasks. Also of importance is a well-developed, clearly stated, and broadly accepted organizational philosophy. The organizational philosophy is the mechanism by which the individual is integrated into the organization. By focusing on the goals of the organization it provides the basis for individual and work-group decision making. The employee of a Theory Z organization is motivated by the long-term commitment the organization is willing to make to him or her, and perhaps of more importance, by the organization's willingness to trust his or her judgment in a wide variety of situations. Ouchi uses the term *subtlety* to indicate the sophistication of an information system that is based on a long-term knowledge of the task, the goals of the organization, and the strengths and weaknesses of one's peers. This combination allows for refinements that often lead to a high level of productivity. It should be clear that the Theory Z approach is not without its costs. These organizations must generally avoid volatile markets and have been criticized for allowing slack resources.

JAY GALBRAITH: CONFRONTING INCREASED UNCERTAINTY

Galbraith examines organizations from a perspective that focuses on their information-processing ability. This approach is useful in exploring the reactions of organizations as they encounter uncertainty. Galbraith begins with the basic bureaucratic organization that operates by a set of rules and passes exceptions up a hierarchy. He states:

> The ability of an organization to successfully utilize coordination by goal setting, hierarchy, and rules depends on the combination of the frequency of exceptions and the capacity of the hierarchy to handle them. As the task uncertainty increases, the number of exceptions increases until the hierarchy is overloaded. Therefore, the organization must again take organization design action.[12]

In Galbraith's view, how an organization confronts increased uncertainty is one of the most important strategic decisions it can make. He suggests that there are two basic strategies. The first is to reduce the amount of information the organization needs to process. The second is to increase the capacity of the organization to process information. The first three of Galbraith's alternative approaches fall into the first strategy; the second two alternatives use the second strategy.

1. *Environmental management.* In this approach the organization, rather than changing itself, attempts to modify its environment. There are a number of mechanisms that can be used. Vertical integration can lessen uncertainty in the supply of resources or in markets. A public relations response may be effective in influencing the environment. Finally, the organization can contract or withdraw from the uncertain environment.

2. *Creation of slack resources.* This approach is simply to reduce the level of performance. More resources can be applied by building redundant systems, increasing inventories, or adding staff. These additional resources are called *slack resources* because they are used only at times of high demand, at other times they are slack. This approach has obvious costs, but it will lessen the stress on the organization and will reduce the number of exceptions passed up the hierarchy.

3. *Creation of self-contained tasks.* This approach changes the ways tasks are divided into subtasks with the aim of creating more self-contained units. One way of achieving this is the creation of units

based on output, geography, or client group, rather than on input, skill, or occupational categories. This reduces the output diversity and the complexity faced by a unit. A second method is to reduce the division of labor. The example cited by Galbraith is the need for computer programming expertise in three departments. In a functional organization a programmer would be hired and his or her time shared between the departments. In the self-contained approach, where there was not sufficient demand for a full-time programmer, the professionals in the department would do their own programming. As Galbraith says, "specialization is reduced but there is not the problem of scheduling the programmer's time across the three possible uses for it."[13]

4. *Investment in vertical information systems.* This is the first of the two approaches that aim to increase the organization's ability to process information. Such systems typically consist of mechanisms for monitoring and adjusting organizational plans and targets. These systems are usually called *management information systems.* They are almost always computer based and are supported by the principles of managerial accounting. The goal of this approach is to collect information on the operation of the organization, to summarize and analyze it, and to channel it to the appropriate places in the hierarchy so that operations can be continually modified to increase productivity.

5. *Creation of lateral relations.* The final approach decreases pressure on the hierarchy by employing a lateral decision process that can cut across lines of authority. Rather than bring the information to the point where the authority to make a decision exists, this approach decentralizes the decision process by bringing the decision to where the information exists. There are a number of such coordinating or liaison mechanisms. They can range from interdepartmental liaisons to task forces, or a matrix design for some or all of the organization. The major cost of this approach is the increased cost of managerial resources that must be devoted to group processes. There is also a risk that decisions taken at lower levels will reflect local rather than organizational goals.

Each of the five alternatives to confronting uncertainty has its costs, and an effective organization will choose the alternative or combination of alternatives that meet its changing requirements at the least cost. It is Galbraith's contention that if an organization makes no conscious choice a choice will be forced upon it. As he states:

> *The organization must adopt at least one of the five strategies when faced with greater uncertainty.* [Italics in the original.] If it does not consciously choose one of the five, then slack, reduced performance standards will happen automatically. The task information requirements and the capacity of the organization to process information are always matched.[14]

BECKER AND NEUHAUSER: VISIBILITY OF CONSEQUENCES

Becker and Neuhauser create a complex contingency theory of organizational effectiveness and structure that they call the "entrepreneurial theory."[15] Not all of the details of their work are of concern, but one concept is most useful in looking at academic libraries. They describe an organizational variable, which they call the visibility of consequences and define as, "the degree to which the owner of an organization can and does evaluate the costs of obtaining a given level of goal attainment from a procedure-resource interaction."[16] In other words, visibility of consequences is high when the head of an organization can and does measure the cost of a program and that program's contribution to the organization's goals. Low visibility of consequences comes about when the head of an organization either cannot—or will not—assess the value of a program in these terms. One way to think of visibility of consequences is to consider the length of time between an action taken by an individual and a reasonable evaluation of the success of that action and the quality of the individual's performance. The longer this period, the lower the visibility of consequences.

Low visibility of consequences, Becker and Neuhauser claim, will lead to an increase in usurpation, that is the inappro-

priate use of organizational resources either by individuals or by departments. In hierarchical bureaucracy, usurpation usually takes a form that Becker and Neuhauser call *ritualization of procedures.* As they describe it, "Ritualization as a form of usurpation occurs when an operator insists on certain procedures not necessarily in the best interest of the organization simply because they benefit him personally."[17] For example, when an operator insists on maintaining old procedures even when new and better ones are available, the operator remains the expert, does not have to be retrained, and gains security. But the organization is less effective.

Becker and Neuhauser also suggest that a high visibility of consequences will assist in conflict resolution within organizations. As they state, "when there is a basis for conflict resolution (high visibility of consequences) . . . resolution will be rapid, and, other things being equal, levels of conflict low."[18] Organizations that have a high visibility of consequences, they claim, are not only quicker to suggest alternatives when faced with environmental change but will also make the necessary adjustments to react to change. When the effects of actions in an organization are clear, adaption is easier. For all of these reasons Becker and Neuhauser hypothesize that visibility of consequences is positively related to organizational efficiency and that procedures that enhance visibility of consequences will enhance the efficiency of organizations. After a number of field studies Becker and Neuhauser claim that there is substantial evidence to support their hypothesis.

LIBRARIES IN LIGHT OF THE THEORY

Organizational Structures

If we look at academic libraries using Mitzberg's organizational typology, we see for the most part machine bureaucracies. As Barbara Moran states in her recent review:

> Academic libraries today are organized in many different patterns, depending upon size, kind of institution, growth rate, geographic dispersal, and available space. Regardless of the organizational pattern chosen, almost all academic libraries are structured in a hierarchical manner.[19]

Helen Howard comes to a similar conclusion after reviewing the literature, "Bureaucratic models of organization dominate most libraries. Few major changes have been reported in the literature."[20] In one of the most exhaustive analyses of the organizational structure of a single academic library, the Booz, Allen, and Hamilton study of the Columbia University Libraries, we again see a hierarchical bureaucracy.[21] While the details of the structure recommended by Booz, Allen, and Hamilton differ in some respects from previous library models, it has all the marks of a hierarchical or machine bureaucracy: a large middle line, a strong technostructure (in this case the planning office) and a support staff. Yet there is a tension. Booz, Allen, and Hamilton recommend a standing committee structure to allow librarians from the operating core to participate in decision making. The structure of the resources group has all the markings of a professional bureaucracy. Another example of the alternative pulls of the machine and professional bureaucratic configurations can be seen in Gorman's description of two reorganizations at the Library of the University of Illinois at Urbana-Champaign.[22] He describes one reorganization that introduced six new assistant directors—an increase in the middle line that might be seen as a move toward a machine bureaucracy. The second reorganization created decentralized groups of professional librarians to carry out selection, cataloging, and reference work, while centralizing clerical and automation-based processing. This looks very much like a move toward a professional bureaucracy. As these two examples show, large academic libraries contain both production and professional functions. Martell presents models for academic library organization much like Mitzberg's professional bureaucracy; it is based on what he calls "client-centered work groups."[23] He solves the professional/production dilemma by placing the production segments of the organization in a support staff role.

Joseph McDonald looked at libraries in light of Mitzberg's theory.[24] He concluded that the professional bureaucratic configuration was the one that most fitted libraries. However, he notes a number of weaknesses that might effect this configuration's effectiveness in the library context. They are (1) coordination by skill standardization is a loose coordinating mechanism that might not be effective in complex organizations; (2) professionals may use their discretion to pursue their own concerns and not the organization's goals, and (3) because innovation requires cooperation and the rearrangement of accepted professional practice, it is difficult to achieve in professional bureaucracies.[25]

Smaller institutions, such as college libraries, unlike their larger cousins, are likely to be configured as simple structures. This allows well-administered college libraries to create programs with a focus and coherence impossible in most university libraries. The example of the Earlham College Library under Evan Farber comes quickly to mind. When we see college libraries as simple structures the reasons for the challenges and opportunities of college librarianship discussed by William Moffett become clear. Moffett describes the overriding need for good staff, especially good directors, and the possibilities for achievement that exist in the college environment.[26] As Mitzberg would tell us, a well-run, simple structure can outmaneuver a bureaucracy anytime.

It is possible to view some academic libraries, especially large systems with many branches, as divisional structures. This is generally not the case. What is more likely is that they are hierarchical bureaucracies segmented by subject or location rather than a true divisional form where the divisions have a high degree of autonomy.

Finally, there are aspects of library operations that may look like adhocracy. Project teams are used for some large undertakings, such as planning and implementing online catalogs, and committees exist in most academic libraries in frightening numbers. But these decentralized decision structures make recommendations as often as policy, and rarely do they fully manage a project. Joanne Euster and Peter Haikalis have described the application of what they call a matrix structure, a common adhocracy mechanism, to the public services department of a medium-sized university library.[27] This however looks more like a decentralized of functional responsibilities than a true matrix structure.

Innovation and Organizational Structure

Klaus Musmann also considers libraries in light of Mitzberg's work. His conclusions are much like those reached above.[28] Musmann goes on to suggest that because of the need to innovate, libraries may be forced to adopt adhocracy as a organizational structure. I believe this conclusion indicates a confusion over the nature of innovation in academic libraries. It is clear that vital organizations, including academic libraries, will change as their environments, especially their technological environments, change. But what change is adaption and what is innovation? In their recent article, Judy Reynolds and Jo Bell Whitlatch concluded, after considering a number of definitions of the term *innovation*, that "most relevant to the study of innovation in libraries is Mohr's definition of innovation—the successful introduction into an applied situation of means or ends that are new to that situation."[29] This is more than semantics. The creation of a complex product is very different from adapting that product to a new niche. If we accept Reynolds and Whitlatch's conclusion, it is Mohr's definition of innovation that we should apply to academic libraries. When we look at organizational theory, we need to be careful not to take as models organizations that are designed to innovate in the first sense. Effective academic libraries must be able to adapt; they must be able to acquire and put to use new technology, but they do not need to create the new technology.

In one of the few systematic studies of innovation in academics Howard found a positive relation between innovation and complexity and a negative relation between innovation and centralization, formalization, and stratification.[30] Howard defined *innovation* more as adaption than as a creation. Her results suggest that pro-

fessional bureaucracy as well as adhocracy may be a structure that will allow this type of innovation. Howard's study confirms that machine bureaucracy is not a suitable structure for academic libraries in the current dynamic technological environment.

Organizational Control Mechanisms

The problems presented by bureaucratic control mechanisms have been clear to librarians for some time. Connie Dunlap states in her review of academic organizational patterns:

> In many libraries bureaucratic organization is being replaced by a collegial system. Bureaucratic organizations tend to produce conformity and generally stifle creativity. Participative systems, on the other hand, generally produce staffs which are not only more interested in the whole library and are more productive, but also staffs which are more flexible and more readily adaptable to change.[31]

The work of Maurice Marchant tends to support Dunlap's view. Marchant examined a number of academic libraries and concluded that management style, through the intervening variable of staff job satisfaction, had a clear influence on the quality of library service as measured by faculty evaluations. This effect is explained by increased motivation and by better upward communication both of which allow for improved policy formation by top management.[32] There are many who see the importance of moving toward participatory management, which might be seen as a form of clan control, in academic libraries. But as Nicholas Burckel has put it, "Certainly one conclusion is that while the enthusiasm for participatory management continues, the experience of some institutions and the research of librarians have tempered some of the more extravagant claims of its early proponents."[33] The reasons for some of the problems with participatory management in the library context become clear if we look at it in light of Ouchi's work. For a number of reasons clan control will be difficult to achieve.

1. Clan control relies on a strong organizational philosophy. This philosophy needs to be established and articulated by the top management of an organization, but given the turnover of top academic library administrators, this is difficult to achieve.[34]

2. Few libraries are large enough to provide both long-term employment and a reasonable chance of promotion. Most often individuals achieve advancement by moving from library to library.[35]

3. The requirement of specialized skills, either subject, language, or technical expertise, makes job rotation and similar programs that provide a broad organizational perspective difficult.

4. Professional socialization in librarianship is weak. Unlike law or medicine where this socialization takes place as part of professional education programs, it is less likely in short, fragmented library school programs.

Given these difficulties in developing and conveying a coherent organizational philosophy and developing staff loyalty, it is difficult to risk decentralized decision making. The clan mechanism of organizational control relies on the organization's philosophy as the major mechanism for coordinating decisions. Without it, decentralized decisions may often not be in the best interest of the organization.

Ouchi and other recent management theorists have argued against the use of market mechanisms, but in the library context I do not find their arguments compelling. Libraries have never operated in a market environment, so the extremes of the market do not exist in libraries. As I have argued, market mechanisms may provide academic libraries with a number of benefits including better and more appropriate services and increased ability to judge performance. To make this possible will require developing better management information systems, which could well provide a clear picture of the nature of operations.[36] Formula systems for allocating materials budgets are implicitly based on a market mechanism, especially when use is a part of the formula. The largest impediment to the use of market mechanisms is the lack of flexible approaches to resource allocation. Richard Talbot describes the traditional approach to library finance and budgeting:

> Just as it is only a modest exaggeration to claim that library finance is dominated by the 5 percent rule, it is also only a modest exaggeration

to claim that library budgeting—the allocation of funds received by the library—is dominated by the 60-30-10 rule: 60 percent of the library budget is for staff, 30 percent for acquisitions, and 10 percent for other costs. This pattern has persisted for so long that it approximates a historical norm.[37]

Libraries have generally been unwilling to alter their patterns of budgeting. The status quo may be safer than any change because they have few reasons sounder than past practice upon which to base decisions.

A market mechanism would provide incentive to an individual or department by providing benefit to that individual or department based on some objective measure of performance. This might take the form of increased salary or more resources to support the department's programs. The use of market mechanisms requires systematic measures of cost and value, so it is possible to make the necessary comparisons. The first half of the problem is, if not straightforward, at least possible. Methods for establishing and appropriating costs are used in most large academic libraries, but usually only to establish overhead costs for outside funding agencies.[38] The second half of the problem is more problematic. I have suggested a mechanism that uses partial user subsidies and a free market for library services.[39] There has been some good work on performance measures, and the theoretical basis for the necessary information systems exists, but it rarely seems to be applied in practice.[40]

Mechanisms for Confronting Uncertainty

When we look at the means Galbraith has identified for dealing with uncertainty, two can be ruled out from the start. Academic libraries are not in a strong position to manage their environment except to the extent that they wish to withdraw from it and become museums for the book. This is not generally considered to be an acceptable alternative. The creation of slack resources is also unacceptable because of the costs involved.

The other alternatives that Galbraith offers are useful to consider in the academic library context. The creation of self-contained tasks would argue for the development of generalists, but with highly developed professional skills. If adopted they would require a continued commitment to a strong program of staff development. The adoption of this approach to dealing with uncertainty would suggest the use of the professional bureaucratic model.

The investment in vertical information system, or as they are more commonly called, management information systems, has been discussed above. It is certainly a possible approach, but one that few academic libraries have pursued with much vigor. Such systems should provide a good picture of what is happening in the library. As Robert Runyon said in one of the first articles on the use of management information systems in academic libraries, "One of the persistent problems in academic library planning and decision making is to obtain an accurate picture of exactly what is going on within the library."[41] One of the results of lack of good vertical information systems has been pointed out by Marchant:

> The tendency has been to evaluate inputs (such as funding, personnel, and collection size and growth) and processes with the assumption that they will predict the adequacy of the outputs. This weakness has led to overemphasis on internal efficiency and a lack of concern for the place of the library within its environment.[42]

The problem is not that libraries lack statistics, but rather that the statistics are not analyzed well and that they do not measure outputs. Academic libraries often attempt to compensate for this by surveying user groups. While the intention is laudable, the standard method, the questionnaire, should be used with more care than is often shown.[43] One of the persistent problems faced by libraries as they try to construct management information systems is the collection of data for manual systems. Sampling methodologies should be of some help[44], but few librarians seem to possess the required skills. As the University of Lancaster studies demonstrate, even in a manual system it is possible to collect data so that significant understanding can be gained and applied with positive effect to library operations.[45] The application of automated systems should

provide some relief. It is encouraging that some of the libraries with the most advanced automation programs have developed management information systems.[46]

The creation of lateral relations is a strategy that academic libraries often use, as their committee structures attest. Committees are generally seen not only as a way to increase lateral relations, but also as a way to allow for participation in policy formulation by non-administrative staff. Coordinator positions, especially for bibliographic instruction or online searching are not rare. In some cases, for example, those like the one reported by Euster and Haikalis, these positions are quite formal. Liaisons between department libraries and central services such as cataloging are not unknown, and liaison programs with academic departments and other campus groups are quite common. The increase of lateral relations is a strategy for confronting uncertainty because it allows communication and decision making without involving the bureaucratic hierarchy. Unless appropriate independent decisions are allowed, the effectiveness of this strategy will be severely hampered.

Visibility of Consequences

It seems clear that in almost all cases, the visibility of consequences in academic libraries is low. In part, the low visibility of consequences is the result of being seen as once removed from the primary functions of the university—teaching and research. The result of the inability of librarians to demonstrate their contributions has been expressed by R. H. Orr: "Indeed, it can be argued that much of the difficulty experienced in getting support for libraries is attributable to the use of measures of quality and value that have little validity for nonlibrarians."[47] It should be clear that it is not so much that libraianship is seen as unimportant, rather it is difficult to understand the effect of the choices we make in providing service. Is reference desk service of greater value than bibliographic instruction? Should we duplicate high use materials or purchase more less frequently used items? How much quality can we afford in our cataloging? And is any of this more important than keeping the building open until 10 p.m. on Friday nights? That these questions do not have generally shared answers is a sign of low visibility of consequences. Because it is difficult to say what the effects of actions will be, it is hard to determine how to react to changing situations. Resolving conflict becomes difficult, because no one can tell which side of an argument is correct. As most academic libraries are bureaucratic hierarchies, as predicted by Becker and Neuhauser, usurpation by ritualization of procedures is common.

Michael Buckland has applied the notion of a double feedback loop to library service; it is important to the context of visibility of consequences because it explains how academic libraries can continue to function with a low visibility of consequences. As Buckland describes the double feedback loop:

> These two feedback mechanisms are substantially independent of each other in important ways. The librarian's action does not depend on response by the user; and the user's action does not depend on response by the librarian. Further, since library services are normally free, the library's income does not depend directly on the level of demand. Reduced demand, therefore, does not weaken the library as it would a business, where a drop in demand would reduce sales and, therefore, income. Quite the reverse, a reduces demand for free services reduced the pressure, leaving the existing resources more adequate to cope with the remaining demand.[48]

Buckland is saying that because the users in academic libraries are rarely the same people who decide levels of funding or allocations, the dissatisfaction they express has little effect on the actions of librarians. In fact, because increased resources rarely follow increased use, it is not in the best interest of librarians to generate use, as it will only make the system more congested and raise levels of frustration. Until management information systems are in place that can measure library performance and budget systems are flexible enough to respond to changes in demand, the double feedback loop will remain, as will the low quality of many library services. As Buckland states, "This [the double feedback loop] helps to explain a noteworthy cybernetic aspect of library service: Library services can survive with remarkable stability even in the absence of effective library

management. Survive, that is, not excel."[49]

AN ORGANIZATIONAL PARADIGM

If academic libraries are to be adaptive, if they are to be innovative in the sense of creatively using the new technologies, they must first be innovative in their organizational structures. As Rosabeth Kanter states, "Indeed, it is by now a virtual truism that if technological innovation turns far ahead of complementary social and organizational innovation, its use in practice can be either dysfunctional or negligible."[50] The information technology exists. We have bibliographic utilities, integrated online catalog systems, online database searching, microcomputers, and laser disks. The challenge before us is to build the organizational structures which will allow us to use this technology creatively.

The structure and organizational philosophy that is suggested by the theory and research discussed above, at least to this author, may be divided into five components. These components will need to be applied differently in different situations, but taken together they should provide a framework for effective academic libraries. The components are:

1. The use of a modified professional bureaucratic configuration as a model for organizational structure.
2. The creation of flexible resource allocation mechanisms.
3. The use of management information systems to monitor performance.
4. The reduction of the production functions performed within the organization.
5. The creation and articulation of a well-developed, detailed organizational philosophy.

It is important to remember that these components should all be used together. It is the package that is important, not one piece of it. Each component will be examined in turn.

The Modified Professional Bureaucratic Configuration

The first requirement for an effective academic library is an ability to recruit and maintain a skilled and motivated staff. As Battin has said, "the quality of the library staff during the next decade will be more important to the future health and vitality of the university than the quality of the instructional and administrative staff."[51] To attract and keep highly skilled staff motivated will require an organization that allows and encourages professional behavior. Even if academic salaries were to become and remain competitive, this would still be the most critical factor. Marchant has put it well: "If people are hired with skills being demanded, the skills must be used."[52] The professional bureaucratic configuration allows professional discretion and the autonomy without which skilled staff will become frustrated and will not be motivated to achieve high levels of performance. A compensation system that allows recognition of professional as well as administrative achievement, such as the one at Columbia University, described by Frederick Duda, will encourage the development of professional practice and skills.[53]

As part of the adoption of the professional bureaucratic configuration, the middle line should be reduced and as many strictly administrative positions as possible should be eliminated. This would mean large spans of control for the few remaining administrators. But because many decisions will be made at the operating core this should not be a problem. First-line administrators should remain, at least in part, professional operators. This flattening of the organization should improve communication in both directions. The top management will be closer to the operating core and the intelligence it gathers through its daily operations, and the operating core will be closer to the organizational goals conveyed from top management. Support services should be supplied to relieve librarians of nonprofessional tasks. The technostructure should be reduced, and replaced with a continuing commitment to train professional staff in the use of new technologies, and planning and control methodologies.

There is a legitimate concern that autonomous, specialized professionals bound together by only collegial governance will be more interested in personal goals than in the goals of the organization. Mc-

Donald, as stated above, noted the potential for these problems. Martell's solution is to develop client-center work groups. The group may have within it experts, but the idea is to create a pool of talent, of say six to ten librarians, that can deal with a broad range of tasks. Martell suggests the formation of subject or clientele-based groups, which contain all the professional functions, from cataloging to reference. While this may work in some circumstances, the particulars of the group are less important than the attempt to combine a broad range of tasks within it. Groups of six to ten are small by most standards, but in academic libraries, groups of this size should go a long way to breaking down barriers and reducing segmentation. That the group has within it many self-contained tasks, as Galbraith suggests, should make the groups and the organization more flexible.

By focusing on the group as the primary unit within the organization, a balance toward the professional autonomy is created. By adding group goals backed by peer pressure to a common sense of professional practice, many of the concerns of organizational coordination should be resolved. The knowledge of one's peers that comes with group work is one of the components of a clan control system. It motivates and encourages the good use of an individual's talents. The basic management of the groups should be collegial and participative. Outputs need to be monitored, but groups should not be told how to run their operations. As Kanter puts it, "One key to managing knowledge workers is to let them alone to use their knowledge."[54]

Flexible Resource Allocation

The information technology will allow for the creation of new programs, but it will require capital investment. At the very least, a microcomputer should be on every librarian's desk. To build local files on any size will require access to mainframe computers. The capital investment required for a circulation system or online public catalog is the beginning of the trend, not a one-time expenditure. Academic libraries will become more capital intensive institutions, and the 60-30-10 allocation rule will have to be altered. Making the library a part of the wired university will require investment, and academic libraries will have to learn how to make these investments. Part of this process should be an attempt to encourage risk taking by creating pools of "venture capital" within academic libraries; an atmosphere that allows entrepreneurial projects at the lowest levels should be created.

A second factor that will require more flexible resources allocation will be the development of professional work groups. These groups must have a say in spending funds. The successful service programs that were developed over the last decade and a half, library instruction and online searching, were programs that required little or no capital. The primary resource that went into these programs was the time and energy of the librarians who developed them. But the librarians controlled them. It is not unreasonable to suggest that this was one reason for their success. As more capital investment becomes necessary to develop service programs, the professionals in the operating core will have to have an increased say in how this investment should be made. This is necessary both because they are in the best position to know what is needed, and because if programs and systems are imposed from above the operators will have less motivation to see them succeed. It is important that librarians in the operating core be given the power to act. Effective management information systems and good internal accounting should assure that the money is generally well spent. This will require a major rethinking of allocation practice, but without enpowering the professionals in the operating core by providing project funding, little else matters.

Management Information Systems

Management information systems will play two important functions. First, measuring the output of groups will provide feedback that will show how they are performing in light of institutional goals. Second, the visibility of consequences will be raised across the organization. It will be possible to observe which programs had what effect, and to reward performance

both in terms of the salaries of individuals and the resources made available to groups.

It may seem that the measurement required of a management information system runs counter to the discretion implied by the professional bureaucratic configuration. Kathleen Heim has countered this argument:

> For those top managers with an inclination to share power and control of decisions, the MIS [Management Information System] many actually make this process more palatable. Since an MIS allows monitoring of decisions, a manager inclined to share power may do so and continue to monitor the outcome with a capacity to determine if a subordinate has acted in an acceptable manner.[55]

If the double feedback loop can be broken with management information systems, then quality service will be noticed and should be rewarded. Contrary to what might be expected, management information systems will allow more professional autonomy, not less. By concentrating on outputs, management information systems should force groups to look outward toward their clientele. This should encourage a broader exposure to the environment.

Management information systems should also provide insights into operations that will lead to more effective services. Despite much good quantitative work on the functioning of academic libraries, little of this work seems to be a part of the day-to-day operations of libraries. This need not be the case and management information systems will be an important contributing factor to bringing about this change. This, in turn, should bring stronger arguments for support. A management information system should demonstrate what the library does in terms that are understandable to funders. The demands on institutions of higher education are too great to rely on the platitudes about the "heart of the university" as the basis for financial support. By raising the visibility of consequences we should be able to move beyond the platitudes and begin to speak in terms of the library's contribution to the college or university.

Reduction of Production Functions

This trend is well established. Binderies are already largely things of the past. Bibliographic utilities are providing academic libraries an opportunity to spread the risk of large investments and to purchase a product that had previously been largely homemade. As was stated at the outset, this change may allow academic libraries to escape from an organizational structure that has been dominated by the need to assure standard work procedures. By exporting much of the production part of what academic libraries do, there will be less conflict between the parts of the organization that must be structured for production and the parts of the organization that are structured to provide information services to the members of the academic community. The export of production functions will make academic library organizations less schizophrenic.

Organizational Philosophy

In this consideration of organizational structure, the particulars of an organizational philosophy are less important than the fact that it exists, that it is well developed, fully articulated, and taken seriously by the organization. When well done it is the written expression of the culture of the organization. To quote Ouchi:

> Some organizations do have a self-conscious awareness of the underlying values and beliefs that they represent. With such an explicit awareness, an organization's philosophy can be its most useful tool in uniting the activities of employees through a common understanding of goals and values. A philosophy provides a standard of responses to problems, explains why certain behaviors will be rewarded, and accounts for company image. . . . Moreover, this development of organizational culture can in part replace bureaucratic methods of giving orders and closely supervising workers, thus leading to both increased productivity and supportive relations at work.[56]

In the academic library context the development of an organizational philosophy may be particularly important. The issue of the inappropriate use of professional discretion was raised above, to some extent the use of work groups and increased visibility of consequences will provide a

balance. But the tool that will best channel the energies of professional librarians will be an organizational philosophy.

The development of an organizational philosophy in academic libraries will not be easy. Organizational philosophies generally begin at the top, and as we noted above, academic library directors may not stay in one place long enough to leave their mark. In addition, advancement in academic librarianship often requires movement between institutions. Without stability, the cultural traditions of the organization are lost. Despite these problems, academic libraries have some advantages. Many are part of institutions with long traditions and rich cultures. And while librarians' sense of professional practice may be weak, it exists and can be built upon. Perhaps the most effective approach to developing an organizational philosophy in academic libraries is a broad-based planning program. Methodologies to support such efforts have been developed by the Office of Management Studies of the Association of Research Libraries; their existence should be seen as a major resource. By using staff involvement as a means of gaining a wide organizational view and support for the results, this method should overcome the endemic problems academic libraries face in developing organizational philosophies. This work will not be easy, and in a world of daily crisis the effort required may seem ill spent, but it will be the key to constructing effective academic libraries.

A FINAL WORD

When put together all of this comes to a very simple principle: to provide academic librarians the tools to achieve success. Herbert S. White put the problem this way:

> Libraries, to a greater extent than other political units, embrace or allow themselves to be coerced into accepting objectives for which there are no resources, no plan, and no hope of success. We tell our staff members to "do the best they can," thereby clearly absolving them of responsibility but also depriving them of any hope of success and ultimate celebration. In other words, the objectives are gibberish, and nothing really matters.[57]

The paradigm I have suggested is designed to encourage coordinated professional discretion applied toward the solution of problems. It attempts to provide the necessary resources, and to measure the results. The times offer academic libraries many opportunities, but they will be hard to grasp. Until academic librarians are provided with the tools with which to apply their talents and until the outcomes of their efforts are measured, they will not know much of White's "ultimate celebration." To quote White again, "Nobody likes to lose all of the time, and if library workers perceive that they never had a chance in the first place, they will quite understandably quit caring and trying."[58] Given the tools and encouragement to use their professional judgement, I predict the opposite result. One successful project will lead to another; we will find the energy and imagination necessary to use and adapt the technology, and with that technology we will make significant contributions to our institutions and to the advancement of knowledge.

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